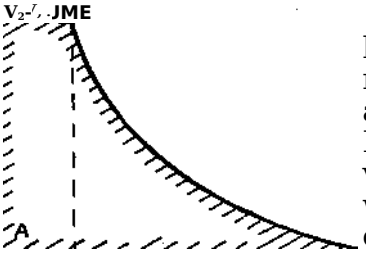

In fig. 4 the vertical and horizontal axes represent respectively the pressure and volume scales of i Ib. of steam. BC represents the increase in volume when i Ib. of water is u converted into steam at a pressure P_v CD represents the adiabatic expansion line from the initial pressure P! and specific volume V_x to the final pressure P_2 and specific volume V_2. DA represents the reduction in volume as the steam, at pressure P_2, is condensed back to water. The total work available during the cycle is represented by the area ABCD.

Fig. 4.—Rankine Cycle PV Diagram

During adiabatic expansion the pressures and specific volumes of steam are very accurately represented by a law of the form

$$PV^n = \text{constant.}$$

The curve from C to D follows this law, and area CDEF under this curve is given by the expression

$$\int_{J}^{v_a}$$

$$\frac{}{n - i}$$

The expression for the work (W) available during adiabatic expansion can now be ascertained. It is given by

$$W = PtVi\ 4$$

$$\frac{}{n - i}$$

To obtain the value of the work available in foot-pounds, the pressures must be stated in pounds per square foot. In the nozzle this available work

$$C^2$$

is converted into kinetic energy, —, and thus